

CLAIMS

1. An apparatus for collecting video information relating to gaming activities, the apparatus comprising:

5 a gaming table having an upper surface, a lower surface and a perimeter surrounding the upper surface of the gaming table, the upper surface lying in a plane which is substantially parallel to a support surface upon which the gaming table rests, wherein a plurality of lines can be defined along the perimeter of the gaming table, each of the plurality of lines being defined to extend normally to the upper surface and to intersect the perimeter at a different point along the perimeter, the plurality of lines defining a surrounding wall of a volume of space above the upper surface, wherein the
10 volume of space extends upwardly and normally above the upper surface, and wherein the volume of space is defined within the surrounding wall; and

at least one video camera disposed in the volume of space above the upper surface or below the lower surface, the at least one video camera being adapted to collect video information pertaining to gaming activities being conducted on the upper
15 surface of the gaming table;

wherein the at least one video camera comprises a line-of-sight, which comprises an axis of the video camera defined between a focal point on a lens of the video camera and a focal point on a target at which the video camera is aimed, the video camera being positioned of the gaming table so that the line-of-sight of the video
20 camera forms an angle with the plane of the upper surface that is less than about 45 degrees.

2. The apparatus for collecting video information relating to gaming activities as set forth in Claim 1, wherein the at least one video camera is physically connected to the gaming table.

3. The apparatus for collecting video information relating to gaming activities as set forth in Claim 1, wherein the at least one video camera is positioned to have a line of sight of less than about 10 degrees with the plane of the upper surface.

4. The apparatus for collecting video information relating to gaming activities as set forth in Claim 1, wherein the at least one video camera is positioned on the gaming table to have a line of sight of less than about 5 degrees with the plane of the upper surface.

5. The apparatus for collecting video information relating to gaming activities as set forth in Claim 4, wherein the at least one video camera is positioned beneath a chip tray on the gaming table.

6. The apparatus for collecting video information relating to gaming activities as set forth in Claim 5, wherein the at least one video camera positioned beneath the chip tray on the gaming table comprises a plurality of video cameras positioned beneath the chip tray on the gaming table.

7. The apparatus for collecting video information relating to gaming activities as set forth in Claim 6, wherein:

the gaming table comprises a plurality of bet positions disposed on the upper surface of the gaming table; and

5 each of the plurality of video cameras positioned beneath the chip tray on the gaming table is focused on a different one of the bet positions.

8. The apparatus for collecting video information relating to gaming activities as set forth in Claim 7, and further comprising a multiplexer operatively connected to each of the plurality of video cameras, the multiplexer being responsive to inputs from a remote station to switch between each of the plurality of video cameras.

9. The apparatus for collecting video information relating to gaming activities as set forth in Claim 8, wherein the multiplexer is disposed behind the video cameras directly underneath the trip tray.

10. The apparatus for collecting video information relating to gaming activities as set forth in Claim 8, wherein each of the plurality of video cameras comprises a digital video camera.

11. The apparatus for collecting video information relating to gaming activities as set forth in Claim 8, wherein each of the plurality of video cameras comprises an analog video camera.

12. The apparatus for collecting video information relating to gaming activities as set forth in Claim 11, and further comprising a video capture device operatively connected to the multiplexer and disposed beneath the gaming table.

13. The apparatus for collecting video information relating to gaming activities as set forth in Claim 5, wherein the at least one video camera is positioned beneath the chip tray and behind a transparent barrier.

14. The apparatus for collecting video information relating to gaming activities as set forth in Claim 13, wherein the transparent barrier comprises a planar surface that is oriented to eliminate a possibility of a player at the gaming table seeing an underside of a card in a reflection of the glass barrier.

15. The apparatus for collecting video information relating to gaming activities as set forth in Claim 13, wherein the transparent barrier comprises a surface that is covered with a non-reflective film to eliminate a possibility of a player sitting at the gaming table seeing an underside of a card in a reflection of the glass barrier.

16. The apparatus for collecting video information relating to gaming activities as set forth in Claim 13, wherein the transparent barrier comprises a surface that is made from a non-reflective material to eliminate a possibility of a player sitting at the gaming table seeing an underside of a card.

17. The apparatus for collecting video information relating to gaming activities as set forth in Claim 14, wherein the at least one video camera positioned behind the transparent barrier comprises a plurality of video cameras positioned behind the transparent barrier.

18. The apparatus for collecting video information relating to gaming activities as set forth in Claim 17, wherein the transparent barrier comprises tinted glass.

19. An apparatus for collecting video information relating to activities on a gaming table, the apparatus comprising:

a sensor disposed in proximity to the gaming table, the sensor being adapted to sense an occurrence of an event on a surface of the gaming table and to output a change-of-state signal;

at least one video camera disposed in proximity to the gaming table, the at least one video camera being configured and positioned to be activated to collect the video information relating to activities on the gaming table;

circuitry adapted to detect the change-of-state signal from the sensor, the circuitry further being adapted to activate the at least one video camera to automatically collect the video information upon the detection by the circuitry of the change-of-state signal from the sensor.

20. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 19, wherein the circuitry comprises a microprocessor 50.

21. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 19, wherein the at least one video camera comprises a plurality of video cameras.

22. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 19, wherein the event comprises a positioning of a hand of a user or customer over a predetermined location on the upper surface of the gaming table.

23. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 22, wherein the sensor comprises a density sensor.

24. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 22, wherein the sensor comprises a photocell.

25. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 22, wherein:

the at least one video camera comprises a plurality of video cameras; and
each one of the plurality of video cameras is focused on a different bet position
on the upper surface of the gaming table.

26. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 25, wherein the predetermined location comprises a location to a right of a chip tray and in front of a discard rack.

27. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 21, wherein the event comprises a positioning of a hand of a user over an area to a right of a chip tray and in front of a discard rack.

28. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 19, wherein the event comprises an absence or presence of a card over a predetermined location on the upper surface of the gaming table.

29. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 28, wherein the sensor comprises a photocell.

30. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 28, wherein the sensor comprises of a stud sensor (capacity sensor.)

31. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 28, wherein:

the at least one video camera comprises a plurality of video cameras; and

5 each one of the plurality of video cameras is focused on a different bet position on the upper surface of the gaming table.

32. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 31, wherein the predetermined location comprises a location directly in front of a chip tray.

33. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 21, wherein the event comprises a positioning of a card on the gaming table directly in front of a chip tray.

34. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 21, wherein:

the sensor comprises a first sensor that is positioned to sense an occurrence of a first event on the surface of the gaming table and to output a first change-of-state signal;

the apparatus for collecting video information relating to activities on a gaming table further comprises a second sensor positioned to sense an occurrence of a second event on the surface of the gaming table and to output a second change-of-state signal; and

the circuitry is adapted to detect the first change-of-state signal from the first sensor and the second change-of-state signal from the second sensor, the circuitry further being adapted to activate the at least one video camera to automatically collect the video information upon the detection by the circuitry of both the first change-of-state signal from the first sensor and the second change of state signal from the second sensor.

35. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 34, wherein:

the first event comprises a positioning of a hand of a user or customer over a first predetermined location on the upper surface of the gaming table; and

the second event comprises an absence or presence of a card over a second predetermined location on the upper surface of the gaming table.

36. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 34, wherein:

the circuitry is adapted to no longer activate the at least one video camera upon the detection by the circuitry of an absence or presence of the first change-of-state signal; and

the circuitry is further adapted to cause video data from the at least one video camera to be placed into a digital storage medium, upon detection by the circuitry of an absence or presence of the second change-of-state signal.

37. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 36, wherein:

the first event comprises a positioning of a hand of a user or customer over a first predetermined location on the upper surface of the gaming table; and

the second event comprises an absence or presence of a card over a second predetermined location on the upper surface of the gaming table.

38. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 37, wherein the at least one video camera comprises a plurality of video cameras focused on different bet positions on the gaming table.

39. A video camera assembly for use on a gaming table, the video camera assembly comprising:

a frame adapted to be coupled to a gaming table and to support a chip tray, wherein the frame comprises a length and a width which correspond in dimension to a length and a width of the chip tray; and

a plurality of video cameras secured to the frame, each of the plurality of video cameras being adapted to be focused on an individual bet position on the gaming table.

40. The video camera assembly as set forth in Claim 39, wherein:
the frame has a rectangular shape;
the frame comprises two side walls, a back wall and a transparent front wall;
the plurality of video cameras are positioned to focus through the transparent
5 front wall.

41. The video camera assembly as set forth in Claim 40, wherein:
the transparent front wall comprises a plane of tinted glass; and
the plane of tinted glass forms an angle of about 15 degrees with a line
perpendicular to the upper surface of the gaming table;
5 wherein the transparent barrier comprises a planar surface that is oriented to
eliminate a possibility of a player sitting at the gaming table seeing an underside of a
card in a reflection of the glass barrier.

42. The video camera assembly as set forth in Claim 40, wherein the frame
is adapted to elevate the chip tray about 2cm above the upper surface of the gaming
table.

43. A method of collecting video information relating to activities on a
gaming table, the method comprising the following steps:
providing at least one sensor in proximity to the gaming table, the sensor being
adapted to sense the occurrence of an event on the surface of the gaming table and to
5 output a change-of-state signal;

providing at least one video camera in proximity to the gaming table, the at least one video camera being configured and positioned to be activated to collect the video information relating to activities on the gaming table;

10 the at least one sensor outputting a change-of-state signal, in response to the sensor sensing the occurrence of an event on the surface of the gaming table;

detecting by a circuit the change-of-state signal from the at least one sensor;
and

15 the circuit activating the at least one video camera to automatically collect the video information, upon the detection by the circuit of the change-of-state signal from the at least one sensor.

44. The method of collecting video information relating to activities on a gaming table as set forth in Claim 43, wherein:

(a) the step of providing at least one sensor comprises the following steps:
5 (1) providing a first sensor that is positioned to sense an occurrence of a first event on the surface of the gaming table and to output a first change-of-state signal; and

(2) providing a second sensor that is positioned to sense an occurrence of a second event on the surface of the gaming table and to output a second change-of-state signal;

10 (b) the step of the at least one sensor outputting a change-of-state signal, in response to the sensor sensing the occurrence of an event on the surface of the gaming table, comprising the following steps:

15 (1) the first sensor outputting a first change-of-state signal, in response to the first sensor sensing the occurrence of the first event on the surface of the gaming table;

(2) the second sensor outputting a second change-of-state signal, in response to the second sensor sensing the occurrence of the second event on the surface of the gaming table;

20 (c) the step of detecting by a circuit the change-of-state signal from the at least one sensor comprises a step of detecting by the circuit at least one of the first change-of-state signal from the first sensor and the second change-of-state signal from the second sensor; and

25 (d) the step of the circuit activating the at least one video camera to automatically collect the video information comprises a step of the circuit activating the at least one video camera to automatically collect the video information upon the detection by the circuit of at least one of the first change-of-state signal from the first sensor and the second change of state signal from the second sensor.

45. The method of collecting video information relating to activities on a gaming table as set forth in Claim 44, wherein:

5 the step of detecting by the circuit at least one of the first change-of-state signal from the first sensor and the second change-of-state signal from the second sensor comprises a step of detecting by the circuit both the first change-of-state signal from the first sensor and the second change-of-state signal from the second sensor; and

the step of the circuit activating the at least one video camera to automatically collect the video information upon the detection by the circuit of at least one of the first change-of-state signal from the first sensor and the second change of state signal from the second sensor comprises a step of the circuit activating the at least one video camera to automatically collect the video information upon the detection by the circuit both the first change-of-state signal from the first sensor and the second change of state signal from the second sensor.

46. The method of collecting video information relating to activities on a gaming table as set forth in Claim 45, wherein the step of detecting by the circuit both the first change-of-state signal from the first sensor and the second change-of-state signal from the second sensor comprises a step of detecting by the circuit both the first
5 change-of-state signal, corresponding to a hand of a user or customer being placed over a first predetermined location on the upper surface of the gaming table, and the second change-of-state signal, corresponding to a card ⁹~~not~~ being present or absent over a 2-16-99 second predetermined location on the upper surface of the gaming table.

47. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 45, wherein the step of the circuit activating the at least one video camera to automatically collect the video information, upon the detection by the circuit of the change-of-state signal from the at least one sensor, is
5 followed by a step of the circuit ceasing to activate the at least one video camera upon the detection by the circuit of an absence of the first change-of-state signal.

48. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 47, wherein the step of the circuit ceasing to activate the at least one video camera upon the detection by the circuit of an absence or presence of the first change-of-state signal, is followed by a step of the circuit
5 causing video data from the at least one video camera to be placed into a digital storage medium, upon detection by the circuitry of an absence or presence of the second change-of-state signal.

49. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 48, wherein the step of providing at least one video

camera in proximity to the gaming table comprises a step of providing a plurality of video cameras in proximity to the gaming table; and

5 the step of the circuit activating the at least one video camera to automatically collect the video information comprises a step of the circuit activating the plurality of video camera to automatically collect the video information.

50. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 49, wherein the step of providing a plurality of video cameras in proximity to the gaming table comprise a step of providing a plurality of video cameras in proximity to the gaming table with each one of the plurality of video cameras being focused on a different bet position on the gaming table.

51. The method of collecting video information relating to activities on a gaming table as set forth in claim 43, wherein the change-of-state signal comprises a closed signal that is output by the sensor upon detection by the sensor that an object has been placed over a predetermined point on a surface of the gaming table.

52. The method of collecting video information relating to activities on a gaming table as set forth in claim 43, wherein the change-of-state signal comprises a closed signal that is output by the sensor upon detection by the sensor that an object has been placed over a predetermined point on a surface of the gaming table.

53. The apparatus for collecting video information relating to gaming activities as set forth in claim 13, wherein the transparent barrier comprises a curved surface that is oriented to eliminate a possibility of a player at the gaming table seeing an underside of a card in a reflection of the glass barrier.

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54. The apparatus for collecting video information relating to gaming activities as set forth in Claim 19, wherein the sensor is connected to the gaming table.

55. The apparatus for collecting video information relating to gaming activities as set forth in Claim 19, wherein the sensor is disposed in proximity to but does not contact the gaming table.

56. The apparatus for collecting video information relating to gaming activities as set forth in Claim 19, wherein the sensor comprises a video camera.

57. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 25, wherein the predetermined location comprises a location to a left of a chip tray and in front of a discard rack.

58. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 19, wherein the sensor comprises an air pressure sensor constructed to react to a placement of or removal of a card or a hand of a user or customer over a predetermined location of the gaming table 10.

59. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 19, wherein the sensor comprises a radar device constructed to detect a placement of or removal of a card or a hand of a user or customer over a predetermined location of the gaming table 10.

60. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 19, wherein the sensor comprises an infrared sensor reacting to the absence or presence of body heat radiating from a user's hand.

61. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 19, wherein the sensor comprises an ultrasound transmitter and receiver reacting to the change of echo when a user's hand or a card is placed over the sensor.

62. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 19, wherein the sensor comprises a magnetic hall-effect sensor reacting to the absence or presence of a small magnet located on a user's arm cuff.

63. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 19, wherein the sensor comprises an inductive touch sensor reacting to the touch of a user's hand.

64. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 19, wherein the sensor comprises a photo transmitter and receiver reacting to a change in light intensity.

65. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 34, wherein:

the first event comprises an absence or presence of a card over a second predetermined location on the upper surface; and

5 the second event comprises a positioning of a hand of a user or customer over a first predetermined location on the upper surface of the gaming table of the gaming table.

66. The apparatus for collecting video information relating to activities on a gaming table as set forth in Claim 36, wherein:

the first event comprises an absence or presence of a card over a second predetermined location on the upper surface; and

5 the second event comprises a positioning of a hand of a user or customer over a first predetermined location on the upper surface of the gaming table of the gaming table.

67. The video camera assembly as set forth in Claim 39, wherein the frame is adapted to rest on an upper surface of a gaming table.

68. The video camera assembly as set forth in Claim 39, wherein the frame is adapted to be mounted inside of a pre-existing hole, which was previously cut into a gaming table for accommodating a chip tray.

69. The apparatus for collecting video information relating to gaming activities as set forth in Claim 4, wherein the at least one video camera is positioned on the upper surface of the gaming table next to a chip tray.

70. The apparatus for collecting video information relating to gaming activities as set forth in Claim 69, wherein:

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the chip tray comprises an inner side facing a center of the upper surface of the gaming table and an outer side facing away from the center of the upper surface of the gaming table; and

the at least one video camera is positioned on the upper surface of the gaming table by the inner side of the chip tray.

71. The apparatus for collecting video information relating to gaming activities as set forth in Claim 70, wherein the at least one video camera is disposed within a housing on the upper surface of the gaming table by the inner side of the chip tray.